

Remarks

Applicants respectfully request reconsideration of this application as amended. No claims have been amended. No claims have been cancelled. Therefore, claims 1-23 are presented for examination.

Claim 1-23 stand rejected under 35 U.S.C. §112, first paragraph, as based on a disclosure which is not enabling. In particular, the Examiner asserts that applicant's specification lacks the proper teachings that are critical or essential to the practice of the invention, but not included in the claims is not enabled by the disclosure. See Office Action at page 2, paragraph 4. Applicant submits that the specification has been properly enabled.

Applicant's specification discloses that a microprocessor is implemented to convert infrared signals (IR) into radio frequency (RF) signals. Further, applicant submits that both IR and RF technologies, and the conversion of each from one form into a different form is well known. In fact one or more of the references cited by the Examiner (e.g., Kobayashi) discloses the conversion of both IR and RF into different forms. Therefore, one of ordinary skill in the art will recognize how IR signals can be converted to RF signals. Accordingly, applicant submits that the specification has been properly enabled.

Claims 1, 2, 4-11, 13-17, 21 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kobayahsi (UK Patent Application 234920) in view of Sulavuori et al. (U.S. Patent No. 5,636,264). Further, claims 3, 12, 18-20 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kobayahsi in view of Sulavuori as applied to claims 1, 7, 15, 16, 17 and 22 above, and further in view of well known in the art. Applicant submits that the present claims are patentable over Kobayahsi in view of Sulavuori.

Kobayashi discloses an option apparatus for a portable terminal unit. The option apparatus of Kobayashi comprises a radio transceiver, an infrared transceiver, and a connector, and the portable terminal unit of Kobayashi comprises a radio transceiver, infrared transceiver, and a connector. In the option apparatus of Kobayashi, a radio transceiver

converts electrical signals supplied from the control circuit into RF signals (Kobayashi, p. 13, lines 1-2), and a light emitting unit converts electric signals received from the infrared transmitter/receiver into infrared radiation (Kobayashi, p. 14, lines 12-18). Nevertheless, Kobayashi does not disclose or suggest a processor to convert information received from an infrared transceiver to a radio frequency format and to convert information received from the radio frequency transceiver to an infrared format.

Sulavuori discloses a computer or telecopier coupled to a radio telephone via an infrared connection. In one embodiment, Sulavuori discloses using the computer/telecopier as an external device with the infrared connection between the radio unit, wherein the computer/telecopier would be between the radio phone and a PCMCIA data card. The PCMCIA data card communicates with the radio phone through the infrared connection. Data from a computer/telecopier is converted in correct form for the radio telephone in the PCMCIA data card, which is transmitted by the radio telephone without any conversion when the radio telephone system is digital. See Sulavuori at col. 8, ll. 47-67.

In another embodiment, Sulavuori discloses the computer/telecopier connected to the radio telephone by the infrared connection, wherein the radio telephone has a built-in-modem. Data received by the radio telephone as a RF signal is converted by the modem to transportable form and the data is converted into asynchronous serial format (e.g., in a UART unit within the telephone. The data is forwarded to an infrared transmitter transmitting the data to the PCMCIA unit within the computer in asynchronous serial form. When the computer sends data through the radio telephone the previous steps are performed in reverse order (col. 9, ll. 1-16).

In yet another embodiment, the system is disclosed implementing an analog radio communication system. In such an embodiment, the necessary signals are transmitted from the radio telephone as infrared pulses to the PCMCIA data card, which converts these signals to appropriate form for the computer. When the computer sends data through the radio telephone, the data is converted to MIC, EAR and data bus signals in the PCMCIA data card

and transmitted to the radio telephone via the infrared link. The necessary conversions are made in the radio telephone, as discussed above, before sending the data through the radio frequency connection (col. 9, ll. 17-28).

Nonetheless, applicant submits that Sulavuori does not disclose or suggest a processor to convert information received from an infrared transceiver to a radio frequency format and to convert information received from the radio frequency transceiver to an infrared format.

Claim 1 of the present application recites:

a processor coupled to the infrared transceiver and the radio frequency transceiver to convert information received from the infrared transceiver to a radio frequency format for transfer to the radio frequency data system and to convert information received from the radio frequency transceiver to an infrared format for transfer to the infrared data port.

Applicant submits that neither Kobayashi nor Sulavuori disclose or suggest a processor converting information received from the infrared transceiver to a radio frequency format or converting information received from the radio frequency transceiver to an infrared format. Kobayashi explicitly teaches that a transceiver converts transmission data (e.g., infrared radiation supplied by the infrared type connection apparatus) into a radio signal with respect to converting infrared data. With respect to converting RF data, Kobayashi teaches a transceiver that converts reception data (e.g., an electric signal that is converted from a received radio signal) into infrared radiation. Thus, Kobayashi does not teach that these conversions are fully performed at a processor. If anything, Kobayashi teaches away from the limitations in claim 1 since the CPU within the control circuit does no conversion.

Similarly, Sulavuori teaches away from the invention as claimed in claim 1. Sulavuori discloses that a PCMCIA card converts digital signals from a computer system to infrared signals. The infrared signals are converted to a digital form at a radio telephone and in one embodiment, converted into an RF format at a modem prior to being transmitted by the telephone. Further, the reverse transaction is disclosed for data received at the telephone

and transmitted to the computer. Consequently, Sulavuori does not disclose or suggest a processor converting information received from the infrared transceiver to a radio frequency format or converting information received from the radio frequency transceiver to an infrared format.

Since neither Kobayashi nor Sulavuori disclose or suggest a processor converting information received from the infrared transceiver to a radio frequency format or converting information received from the radio frequency transceiver to an infrared format, any combination Kobayashi and Sulavuori would also not disclose or suggest such a limitation. Therefore, claim 1 is patentable over Kobayashi in view of Sulavuori.

Claims 2-6 depend from claim 1 and include additional limitations. Therefore, claims 2-6 are also patentable over Kobayashi in view of Sulavuori.

Claim 7 recites:

...
a processor coupled to the infrared transceiver and the radio frequency transceiver to convert information received from the infrared transceiver to a radio frequency format for transfer to the radio frequency data system and to convert information received from the radio frequency transceiver to an infrared format for transfer to the infrared data port.

Thus, for the reasons described above with reference to claim 1, claim 7 is also patentable over Kobayashi in view of Sulavuori. Since claims 8-14 depend from claim 7 and include additional limitations, claims 8-14 are also patentable over Kobayashi in view of Sulavuori.

Claim 15 recites:

...
a processor coupled to the first and second infrared transceivers and the radio frequency transceiver to convert information received from the first and second infrared transceivers to a radio frequency format for transfer to the radio frequency data system and to convert information received from the radio frequency transceiver to an infrared format for transfer to at least one of the plurality of infrared data ports

Accordingly, for the reasons described above with reference to claim 1, claim 15 is also patentable over Kobayashi in view of Sulavuori. Because claims 20 and 21 depend from claim 15 and include additional limitations, claims 20 and 21 are also patentable over Kobayashi in view of Sulavuori.

Claim 16 recites a processor to convert the information from an infrared format to a radio frequency format and to convert the information from a radio frequency format to an infrared signal. Therefore, for the reasons described above with reference to claim 1, claims 16 and 17 are also patentable over Kobayashi in view of Sulavuori. Claims 18 and 19 depend from claims 16 and 17, respectively, and include additional limitations. Consequently, claims 18 and 19 are also patentable over Kobayashi in view of Sulavuori.

Claim 22 recites:

...
a processor coupled to the infrared transceiver and
the radio frequency transceiver to convert information
received from the infrared transceiver to a radio
frequency format for transfer to the radio frequency
data system and to convert information received from
the radio frequency transceiver to an infrared format for
transfer to the infrared data port
...

Thus, for the reasons described above with reference to claim 1, claim 22 is also patentable over Kobayashi. Since claim 23 depends from claim 22 and includes additional limitations, claim 23 is also patentable over Kobayashi in view of Sulavuori.

Claims 1-23 stand rejected under 35 U.S.C. §102(b) as being anticipated by Harrington (U.S. Patent No. 4,864,647). Applicant submits that the present claims are patentable over Harrington.

Harrington discloses a remote control apparatus for activating a device, which is capable of being controlled by an infrared radiation signal. The apparatus includes means for transmitting a radio signal and means for receiving the radio signal and producing the infrared signal corresponding to the radio signal received. The transmitting means includes

an infrared radiation transmitter for transmitting a second infrared signal, and means for receiving the second infrared radiation signal and producing a radio signal corresponding to the second infrared radiation signal received by it. See Harrington at col. 2, ll. 26-42. The means for receiving the second infrared radiation signal and producing a radio signal includes a detector, and amplifier and radio frequency components for converting infrared radiation patterns into an FM radio signal form (col. 3, ll. 10-19).

As discussed above, the present claims recite a processor to convert the information from an infrared format to a radio frequency format and to convert the information from a radio frequency format to an infrared signal. Applicant submits that nowhere in Harrington is there disclosed a processor. Harrington discloses an analog circuit that receives infrared radiation signals and converts the infrared radiation signals into an FM radio signal form. Nevertheless, no processor (or comparable digital circuitry) is disclosed that converts the infrared radiation signals into an FM radio signal. Moreover, Harrington does not disclose a processor that converts information from a radio frequency format to an infrared signal. Therefore, the present claims are patentable over Harrington.

Claims 1-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Cho (U.S. Patent No. 5,995,593). Applicant submits that the present claims are patentable over Cho.

Cho discloses a system for wire/wireless communication of information using a telephone network. The system includes a data transmitting unit positioned at a first location, a first transceiver coupled to the data transmitting unit for transforming the information into a first infrared signal, a first telephone positioned at the first location, a second transceiver coupled to the first telephone for receiving the first infrared signal from the first transceiver and transforming the first infrared signal into an electrical signal to be supplied to the telephone network. See Cho at col. 2, ll. 13-40. Further, Cho discloses that the first and a third transceiver includes an infrared baseband modem for transforming information into an analog form necessary for telephone line transmission, a transmitter means for transforming

an analog signal from the first infrared baseband modem into an infrared signal and a first infrared antenna for transmitting the infrared signal as infrared radiation. A second and fourth transceivers include a second infrared antenna for transforming the infrared radiation into the infrared signal, a receiver means for receiving and converting the infrared signal into the analog signal, and a second infrared baseband modem for receiving and converting the analog signal into the analog form necessary for telephone line transmission (col. 2, ll. 36-50).

Applicant submits that nowhere in Cho is there disclosed or suggested a processor to convert the information from an infrared format to a radio frequency format and to convert the information from a radio frequency format to an infrared signal. In fact, Cho teaches away from the present claims since Cho discloses transforming infrared data into an analog form at a receiver and converting the analog signal into an analog form necessary for telephone line transmission at a baseband modem. Therefore, the present claims are patentable over Cho since Cho does not disclose or suggest a processor to convert the information from an infrared format to a radio frequency format and to convert the information from a radio frequency format to an infrared signal.

Applicant respectfully submits that the rejections have been overcome, and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims as amended be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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